

72. Chitin Biosynthesis in Tissue Culture. H. OBERLANDER,* S. M. Ferkovich, and C. E. Leach, AR/SEA, USDA, P.O. Box 14565, Gainesville, FL 32604

We have investigated the stimulation of chitin biosynthesis by insect tissues cultured in vitro. Wing imaginal

discs of the Indian meal moth, *Plodia interpunctella*, produced chitin when incubated with $\geq 2 \times 10^{-7}$ M 20-hydroxyecdysone. Competence of the wing discs to respond to hormone increased as the last larval instar progressed. The initiation of chitin biosynthesis in competent wing discs treated with hormone was delayed by ≥ 8 hours. Chitin biosynthesis was inhibited by prior exposure of the wing discs to inhibitors of either RNA or protein synthesis. The relationship between the hormone-responsive period and the inhibitor-sensitive period is consistent with the hypothesis that ecdysteroids stimulate insect metamorphosis by promoting the synthesis of new RNA and protein during a hormone-dependent phase followed by hormone-independent protein synthesis.